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TITLE: Synergistic, broad-spectrum herbicidal composition for pre- o  
post-emergence control of weeds in crops, especially maize

INVENTOR: RUEEGG, W

PRIORITY-DATA: 1998CH-0001373 (June 26, 1998)

## PATENT-FAMILY:

| PUB-NO          | PUB-DATE         | LANGUAGE | PAGES | MAIN-IPC   |
|-----------------|------------------|----------|-------|------------|
| WO 200000031 A1 | January 6, 2000  | G        | 061   | A01N043/80 |
| AU 9947768 A    | January 17, 2000 |          | 000   | A01N043/80 |
| EP 1089628 A1   | April 11, 2001   | G        | 000   | A01N043/80 |

INT-CL (IPC): A01N 43/80

ABSTRACTED-PUB-NO: WO 200000031A

## BASIC-ABSTRACT:

NOVELTY - Synergistic herbicidal composition contains as active agen  
mixture of  
5-cyclopropyl-4-(2-methylsulfonyl-4-trifluoromethylbenzoyl)-3--  
(methylthio or methylsulfinyl)-isoxazole (I) with one or more of 32  
categories of other herbicides and/or one or more of 11 specific  
safeners.

DETAILED DESCRIPTION - Herbicidal composition contains (apart from  
conventional formulation auxiliaries) an active agent mixture of:

(A)  
5-cyclopropyl-4-(2-methylsulfonyl-4-trifluoromethylbenzoyl)-3-(methy  
hio or methylsulfinyl)-isoxazole (I) with

(B) a synergistic amount of one or more herbicides and/or

(C) a herbicide-antagonist amount of one or more safeners.

(B) are selected from:

(i) chloroacetanilides of formula (II);

- (ii) N-(2,4-dimethyl-3-thienyl)-N-(1-methoxy-2-propyl)-chloroacetami (specifically as the (S)-isomer);
- (iii) s-triazines of formula (III);
- (iv) cyclohexanediones of formula (IV);
- (v) fused triazoles of formula (V);
- (vi) 6-chloro-4-(hydroxy or n-octylthio-carbonyloxy)-3-phenyl-pyridazine;
- (vii) bromoxynil or ioxynil;
- (viii) 2-(2-(chloro or nitro)-4-methylsulfonyl-benzoyl)-cyclohexane-1,3-di- one;
- (ix) triazolones of formula (VI);
- (x) 5-cyclopropyl-4-(2-methylsulfonyl-4-(chloro or trifluoromethyl)-benzoy- l)-isoxazole;
- (xi) glufosinate-ammonium (specifically as the (S)-isomer);
- (xii) sulfonyl ureas of formula (VII) or their sodium salts;
- (xiii) mebutrizin;
- (xiv) aclonifen;
- (xv) glyphosate;
- (xvi) bentazone;
- (xvii) pendimethalin;
- (xviii) dicamba;
- (xix) S-ethyl diisobutylthiocarbamate (butylate);
- (xx) 3-(3-(2-(allyloxycarbonyl)-2-propyloxycarbonyl)-4-chlorophenyl)-2,4- ioxo-1-methyl-1,2,3,4-tetrahydro-6-trifluoromethyl-pyrimidine;
- (xxi) clomazone;
- (xxii) (2,4-dichlorophenoxy)acetic acid (2,4-D);
- (xxiii) flumiclorac;
- (xxiv) fluthiacet-methyl;
- (xxv) flurtamone;
- (xxvi) flumioxazin;
- (xxvii) paraquat;

(xxviii) azafenidin;  
(xxix) fluthiamide;  
(xxx) fentrazamide;  
(xxxi) isopropazol and  
(xxxii) sulfosate.

The safeners (C) are selected from benoxacor, fenclorim, cloquintocet mefenpyr-diethyl, furilazol, 4-carboxy-4-carboxymethyl-chroman, pyrrolo-pyrimidine derivative of formula (VIII), fluxofenim, dichlormid, flurazole and MON 4460.

n = 0 or 1;

R4 = Me or Et;

R5 = -CH(Me)CH<sub>2</sub>OMe (specifically as the (S)-isomer), CH<sub>2</sub>OMe or CH<sub>2</sub>OE

R7 = Cl or SMe;

R9 = Et, isopropyl or tert. butyl;

R10 = Et or n-propyl;

R11 = COO(1/2Ca), CH<sub>2</sub>CH(Me)SEt or tetrahydropyran-4-yl;

X = O, NOEt or NOCH<sub>2</sub>CH=CHCl;

R12 = H, OMe or OEt;

R13 = Me, OMe or F;

R14 = COOMe, F or Cl;

R15 = H or Me;

Y, Z' = N or CH;

R16, R20 = F or Cl;

R21 = CH<sub>2</sub>CH(Cl)COOEt or NHSO<sub>2</sub>Me;

Y1 = N, CH or N(Me);

Y2 = N, CH or Cl;

Y3, Y4 = CH, or together = S or C-Cl;

Y5 = N or CH;

Y6 = Me or OMe and

R24 = CONMe<sub>2</sub>, COOMe, CH<sub>2</sub>CH<sub>2</sub>F or SO<sub>2</sub>Et.

ACTIVITY - Herbicidal.

In post-emergence tests against Digitaria, the herbicidal effect was % for 150 g/ha of 5-cyclopropyl-4-(2-methylsulfonyl-4-trifluoromethylbenzoyl)-3-methylthio-isoxazole (Ia), 25 % for 100 g/ha of halosulfuron and 90% (compared with a calculated value of 81%) for a combination of 1 g/ha (Ia) and 100 g/ha halosulfuron.

MECHANISM OF ACTION - None given.

USE - For selective control of weeds in crops (claimed), e.g. cereal cotton, soya, sugar beet, sugar cane, plantation crops, rape, rice or especially maize (claimed). The compositions are effective against both mono- and dicotyledonous weeds, e.g. Stellaria, Nasturtium, Agrostis, Digitaria, Avena, Setaria, Sinapis, Lolium, Solanum, Phaseolus, Echinochloa, Scirpus, Monochoria, Sagittaria, Bromus, Alopecurus, Sorghum halepense, Rottboelia, Cyperus, Abutilon, Sida, Xanthium, Amaranthus, Chenopodium, Ipomoea, Chrysanthemum, Galium, Viola and Veronica.

ADVANTAGE - Combinations of (A) (known herbicides described in WO9743270) and (B) and/or (C) have synergistic pre- and post-emergent herbicidal activity against a broad spectrum of weeds occurring in crops, allowing use at lower application rates. The presence of (C) also inhibits phytotoxicity to crops. Compared with (A) alone the compositions have a broader herbicidal spectrum and higher selectivity in crops.